WHAT IS CLAIMED IS:

1. A polymer which has been modified to render it hydrophobic by amidification of a hydrophilic polymer backbone by one or more n-alkylamines, the alkyl chains of which contain 6 to 22 carbon atoms.

2. (Amended) The polymer of claim 1, wherein the n-alkylamine is a di-n-alkylamine.

3. (Amended) The polymer of claim 2, wherein the di-n-alkylamine is di-n-dodecylamine.

4. (Amended) The polymer of claim 1, wherein the hydrophilic polymer backbone is a homopolymer or copolymer based on monomers selected from acrylic acid, methacrylic acid, or any other alkyl derivatives substituted in the B position of the acrylic acid or esters of these acids obtained with mon- or polyalkyleneglycols, acrylamide, methacrylamide, vinylpyrrolidone, itaconic acid, maleic acid, 2-acrylamido-4-sulfonic acid (AMPS) or vinyl sulfonic acid.

5. (Amended) The polymer of claim 4, wherein the hydrophilic backbone is a sodium polyacrylate.

6. (Amended) The polymer of claim 5, wherein the mass average molecular mass of the sodium polyacrylate is in the range 50,000 to 2,000,000, prefreably in the range 100,000 to 1,500,000.

7. (Amended) The polymer of claim 4, wherein the hydrophillic backbone is a statistical copolymer of an acrylate and 2-acrylamido-2-methylpropanesulfonic acid (AMPS).

8. (Amended) The polymer of claim 7, wherein said statistical copolymer comprises in the range 30 mole % to 70 mole % of AMPS per mole of acrylate.

9. (Amended) The polymer of claim 1, wherein the effective degree of modification of the polymer is in the range 0.10 to 0.50 moles of n-alkylamine per mole of hydrophilic polymer.

10. (Amended) The use of the polymer of claim 1 in stabilizing emulsions.

11. (Amended) The use of the polymer of claim 1, in stabilizing petroleum or analogous drilling fluids.

12. (New) The use of claim 11 wherein the petroleum or analogous drilling fluids are selected from drilling fluids, fracturing fluids, acidizing fluids or completion fluids.

13. (New) An emulsion composition comprising

an oleaginous fluid,

a non-oleaginous fluid, and

a polymeric surfactant, wherein the polymeric surfactant is a polyelectrolyte which has a hydrophilic backbone that has been amidified by n-alkylamines in which the alkyl chains contain 6 to 22 carbons, and wherein the polymeric surfactant is in amounts sufficient to form an emulsion.

14. (New) The composition of claim 13, wherein the hydrophilic polymer backbone is a homopolymer or copolymer based on monomers selected from acrylic acid, methacrylic acid, or any other alkyl derivatives substituted in the B position of the acrylic acid or esters of these acids obtained with mon- or polyalkyleneglycols, acrylamide, methacrylamide, vinylpyrrolidone, itaconic acid, maleic acid, 2-acrylamido-4-sulfonic acid (AMPS) or vinyl sulfonic acid.

15. (New) The composition of claim 13, wherein the hydrophilic polymer backbone is a sodium polyacrylate.

16. (New) The composition of claim 15, wherein the mass average molecular mass of the sodium polyacrylate is in the range 50,000 to 2,000,000.

17. (New) The composition of claim 15, wherein the mass average molecular mass of the sodium polyacrylate is in the range 100,000 to 1,500,000.

18. (New) The composition of claim 13, wherein the hydrophillic backbone is a statistical copolymer of an acrylate and 2-acrylamido-2-methylpropanesulfonic acid.

19. (New) The composition of claim 13, wherein n-alkylamine is a di-n-alkylamine.

20. (New) The composition of claim 13, wherein the n-alkylamine is di-n-dodecylamine

21. (New) The composition of claim 13, wherein the effective degree of modification of the polymer is in the range 0.10 to 0.50 moles of n-alkylamine per mole of hydrophilic polymer.

22. (New) The composition of claim 13, wherein the emulsion is an invert emulsion.

23. (New) A method of formulating an invert emulsion drilling fluid, said method comprising:

mixing an oleaginous fluid, a non-oleaginous fluid, and a polymeric surfactant, wherein the polymeric surfactant is a polyelectrolyte having a hydrophilic backbone which has been amidified by n-alkylamines in which the alkyl chains contain 6 to 22 carbons, and wherein the polymeric surfactant is in amounts sufficient to form an emulsion.

24. (New) The method of claim 23, wherein the hydrophilic polymer backbone is a homopolymer or copolymer based on monomers selected from acrylic acid, methacrylic acid, or any other alkyl derivatives substituted in the B position of the acrylic acid or esters of these acids obtained with mon- or polyalkyleneglycols, acrylamide, methacrylamide, vinylpyrrolidone, itaconic acid, maleic acid, 2-acrylamido-4-sulfonic acid (AMPS) or vinyl sulfonic acid.

25. (New) The method of claim 23, wherein the hydrophilic polymer backbone is a sodium polyacrylate.

26. (New) The method of claim 23, wherein the hydrophillic backbone is a statistical copolymer of an acrylate and 2-acrylamido-2-methylpropanesulfonic acid.

27. (New) The method of claim 23, wherein n-alkylamine is a di-n-alkylamine.

28. (New) The method of claim 23, wherein the n-alkylamine is di-n-dodecylamine

29. (New) The method of claim 23, wherein the effective degree of modification of the polymer is in the range 0.10 to 0.50 moles of n-alkylamine per mole of hydrophilic polymer.

30. (New) The method of claim 23, wherein the emulsion is an invert emulsion.

31. (New) The method of claim 23, wherein the emulsion is a regular emulsion.

32. (New) A method of drilling a subterranean well with a drilling fluid, said method comprising:

mixing an oleaginous fluid, a non-oleaginous fluid, and a polymeric surfactant, wherein the polymeric surfactant is a polyelectrolyte having a hydrophilic backbone which has been amidified by n-alkylamines in which the alkyl chains contain 6 to 22 carbons, and wherein the

hydrophillic polymeric surfactant is in amounts sufficient to form an invert emulsion in which the oleaginous fluid is the continuous phase and the non-oleaginous fluid is the discontinuous phase,

circulating said invert emulsion within said subterranean well and

drilling said subterranean well using said invert emulsion as the drilling fluid.

33. (New) The method of claim 32, wherein the hydrophilic polymer backbone is a homopolymer or copolymer based on monomers selected from acrylic acid, methacrylic acid, or any other alkyl derivatives substituted in the B position of the acrylic acid or esters of these acids obtained with mon- or polyalkyleneglycols, acrylamide, methacrylamide, vinylpyrrolidone, itaconic acid, maleic acid, 2-acrylamido-4-sulfonic acid (AMPS) or vinyl sulfonic acid.

34. (New) The method of claim 32, wherein the hydrophilic polymer backbone is a sodium polyacrylate.

35. (New) The method of claim 32, wherein the hydrophillic backbone is a statistical copolymer of an acrylate and 2-acrylamido-2-methylpropanesulfonic acid.

36. (New) The method of claim 32, wherein n-alkylamine is a di-n-alkylamine.

37. (New) The method of claim 32, wherein the n-alkylamine is di-n-dodecylamine

38. (New) The method of claim 32, wherein the effective degree of modification of the polymer is in the range 0.10 to 0.50 moles of n-alkylamine per mole of hydrophilic polymer.

39. (New) The method of claim 32, wherein the emulsion is an invert emulsion.

40. (New) The method of claim 32, wherein the emulsion is a regular emulsion.